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February 13, 2019

WRITER'S CONTACT INFORMATION
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Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: South Dakota Network, LLC Tariff FCC No. 1
WC Docket No. 18-100; Transmittal No. 13

Dear Ms. Dortch:

South Dakota Network, LLC ("SDN"), by its attorneys, hereby submits the declarations of Mr. Larry Thompson, Chief Executive Officer of Vantage Point Solutions, Inc. and Mr. Joseph Neubauer, Carrier Management & Business Systems Support Manager of SDN. These declarations support SDN's argument that CenturyLink cannot be the benchmark for SDN's centralized equal access (CEA) service, as it would not provide CEA to SDN's subtending rural local exchange carriers (RLECs).[1]

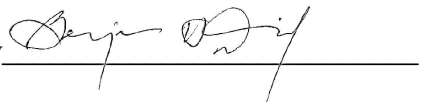
Specifically, the attached declarations provide support for the fact that the hardware and software limitations in CenturyLink's existing operations create substantial barriers to its potential competitive provision of CEA service to SDN's subtending rural local exchange carriers, as contemplated by Section 61.26 of the Commission's rules for benchmark calculation.

If you have any questions, please do not hesitate to contact the undersigned.

[1] SDN's arguments on this issue are summarized in its recent *ex parte* letter of February 6, 2019.

Respectfully submitted,

SOUTH DAKOTA NETWORK, LLC

By 

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CC: Gil Strobel
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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
July 1, 2018 Annual Access Charge Tariff Filing	)	WC Docket No. 18-100
	)	
	)	
South Dakota Network, LLC Tariff F.C.C. No. 1	)	Transmittal No. 13

DECLARATION OF LARRY THOMPSON

I, Larry Thompson, hereby state the following:

1. I am the Chief Executive Officer of Vantage Point Solutions, Inc. (Vantage Point), a telecommunications engineering and consulting company which provides services to more than 400 Independent Local Exchange Companies (ILECs), Competitive Local Exchange Companies (CLECs) and other providers throughout the United States and has more than 250 full-time employees on staff.

2. I am a licensed professional engineer in twenty states. I am a member of the National Council of Examiners for Engineering and Surveying (NCEES). I provide consulting and professional engineering services to Vantage Point's clients in a wide array of technical and regulatory areas associated with telecommunications. I have a Bachelor of Arts degree in Physics from William Jewell College in Liberty, Missouri, and both Bachelor's and Master's degrees in Electrical and Computer Engineering from the University of Kansas in Lawrence, Kansas.

3. It is my professional opinion that it is extremely unlikely that CenturyLink would provide centralized equal access (CEA) at this time, and further that the expense and effort required for CenturyLink to overcome the hardware and software switch reconfigurations,

establish transport to the RLECs, and develop the external operational support systems (OSS) software packages necessary to provide CEA tandem capabilities are so substantial that it would likely not make economic sense for them to do so.

4. Attached hereto is an expert report I have prepared supporting my opinion and further detailing my qualifications.

5. I certify under penalty of perjury that I have personal knowledge of the factual statements contained in therein, and that said statements are true and correct to the best of my knowledge, information, and belief.

Signed: 

Larry Thompson

Executed this 13th day of February, 2019.

VantagePoint
EMPLOYEE OWNED

FEBRUARY 13, 2019

Expert Report

PREPARED FOR WC DOCKET NO. 18-100

SOUTH DAKOTA NETWORK, LLC
TARIFF F.C.C. NO. 1, TRANSMITTAL NO. 13

BY: LARRY THOMPSON, PE

VANTAGEPNT.com 605-995-1777
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1 Switching Overview - Centralized Equal Access

When a customer dials a long-distance telephone number, the Class 5 switch serving the calling party is provisioned to route the call to an interexchange carrier (IXC) – either directly or indirectly through a tandem (Class 4) switch. SDN Communications (SDN) provides these tandem services for most of the small, rural local exchange carriers (RLECs) in South Dakota. Allowing the calling party to choose "equally" amongst the available IXCs is referred to as "Equal Access." A configuration called Centralized Equal Access (CEA) provided by SDN has allowed the RLECs to cost-effectively provide Equal Access to their customers. Over the years, centralizing the Equal Access functions at SDN has allowed the RLECs to minimize or eliminate some of their switch investments. In order to implement CEA, the Class 5 switch serving the calling party and the associated serving tandem must be configured and provisioned differently when compared to a Class 5 switch and tandem that supports only Equal Access. The operational and network difference of Equal Access and CEA are described in sections 1.1 and 1.2.

1.1. Equal Access

In an Equal Access network configuration, the provisioning for routing traffic to a calling party's presubscribed interexchange carrier (PIC) is performed at the originating office Class 5 switch prior to delivering this call to an IXC or to a tandem. When a subscriber selects their preferred IntraLATA and InterLATA IXCs, the PICs are assigned within the serving Class 5 switch. In addition, the routing rules are configured and provisioned within the Class 5 switch to determine which trunk group or circuit where the call should be delivered. The call is then delivered to an IXC either directly or via one or more tandems. These call routes in the Class 5 switch must be maintained for each unique customer and IXC served by the telephone company. The switch also passes along information about the call such as the customer's PIC in the signaling information. Traffic destined for an IXC are often aggregated in a tandem (often a LATA tandem). These tandems use the PIC codes that were added by the originating class 5 switch to route the call to the correct IXC for call completion. The class 5 switch, the tandem, and the IXC maintain billing records regarding each call. These billing records must be reconciled to determine the payments that must be made between the customer and the IXC as well as between the various carriers who provide switching and transport services along the call path. In an Equal Access environment, the RLEC must not only maintain complex routing tables, but must also maintain relationships with a variety of IXCs for billing purposes.

1.2 Centralized Equal Access

In a CEA network configuration, the provisioning for routing calls to the subscriber's PIC is handled at the tandem switching office. When a customer places a call requiring it to be routed to their preferred IntraLATA and InterLATA IXCs, the Class 5 switch simply routes the call to the CEA tandem and is not required to maintain PIC assignments for the subscribers within the Class 5 switch. Since all long-distance calls are simply routed to the CEA tandem, the configuration and provisioning of the Class 5 switch serving the calling party is significantly simplified. The call routing tables for all customers served by the subtending RLECs are maintained in the CEA tandem. These call routing tables at the CEA tandem are only used in a CEA tandem scenario and require specialized switching and operational support systems. These custom tables are updated and maintained by an external software package that is able to interface the switch and update the PIC code for all subscriber phone

numbers that are served off the CEA tandem. When the CEA tandem performs the PIC look-up, the subscribers preassigned carrier is used to determine call routing to the correct IXC for call completion. The billing records for access calls are produced by the CEA tandem for each subtending telephone company. The CEA provider is able to simplify the billing coordination and troubleshooting of issues with each of the IXCs by acting as an agent for the telephone company. To my knowledge, CenturyLink does not offer comparable CEA services and there is no reference to CEA in the CenturyLink intrastate access tariff or CenturyLink interstate access tariff. [1]

2 Centralized Equal Access Switch Capability

As mentioned in Section 1.2 – Centralized Equal Access, the functions required to support the PIC look up are not an inherent capability of the majority of Class 4 tandem switch manufacturers. To my knowledge, these advanced functions were specifically developed to support the unique CEA requirements by the equipment manufacturers that were deployed to support the CEA networks. To date, I only know of three networks that are CEA capable. Since the CEA functions are unique and relevant to just a few deployments, to my knowledge, only two switch manufacturers have invested in the switching requirements to support the capabilities.

I reviewed the Business Integrated Routing and Rating Database System (BIRRDS) which is a collection of databases/tables developed and maintained by Telcordia Technologies, Inc., dba iconectiv. [2] BIRRDS provides topology information to determine the routing of telecommunications traffic and includes the "equipment type" for Class 4 and Class 5 switches used by companies. BIRRDS is the source from which the Local Exchange Routing Guide (LERG) is generated from. The BIRRDS database was utilized to review equipment types for both the local and access tandems for the state of South Dakota deployed by CenturyLink. The CenturyLink tandem switches were all listed as Nokia 5ESS switching equipment. To my knowledge, the Nokia 5ESS does not have inherent CEA capabilities, and is not one of the two tandem manufacturers capable of CEA currently. In review of the Nokia OnLine Customer Support portal, the 5ESS switching product is in a "Limited Availability" state, which is defined as a product that is no longer generally for sale by Nokia but may be available with additional conditions of sale as determined by the product manager. [3]

For these reasons it is extremely unlikely that CenturyLink could provide CEA at this time and, while CenturyLink may argue that an end office switching solution that has been known to historically support CEA services could be utilized, such as the Ribbon DMS-100/200 (previously Nortel Networks DMS-100/200), considerable effort would be required to overcome the hardware and software switch reconfigurations, establish transport to the RLECs and develop the operational support systems (OSS) software packages to provide CEA tandem capabilities. These efforts would require substantial investment by CenturyLink, and it would likely not make economic sense for them to do so. Indeed, the declaration of Mr. Joe Neubauer makes clear that no other

[1] Qwest Corporation d/b/a CenturyLink QC, Access Service Tariff (South Dakota, most current as of 2/11/19); CenturyLink Operating Companies Tariff F.C.C. No 11, Access Service (most current as of 2/11/19).
[2] iconectiv – Business Integrated Routing and Rating Database System, (February 08, 2019).
[3] Nokia – OnLine Customer Support (OLCS): "5ESS Switch", https://support.alcatel-lucent.com/portal/web/support/product-result?productId=5ESS&entryId=1-0000000000359 (February 11, 2019).

carrier could replace a CEA provider without a substantial investment in time and expense, based upon OSS considerations alone.

Statement of Qualifications of Larry Thompson

My name is Larry Thompson. I am the Chief Executive Officer of Vantage Point Solutions, Inc. (Vantage Point). My business address is 2211 North Minnesota Street, Mitchell, South Dakota, 57301.

Vantage Point is a telecommunications engineering and consulting company which provides services to both wireless and wireline companies. These services include, but are not limited to, long-range communication planning, feasibility studies, emerging technology analysis, migration studies, professional engineering and implementation management for telecommunications electronic equipment including wireless and wireline switching and transport, outside plant engineering, RF engineering, field services engineering, and cost separation studies and regulatory consulting. Vantage Point provides these services to more than 400 Independent Local Exchange Companies (ILECs), Competitive Local Exchange Companies (CLECs) and other providers throughout the United States and has more than 250 full-time employees on staff.

I am a licensed professional engineer in twenty states. I am a member of the National Council of Examiners for Engineering and Surveying (NCEES). I provide consulting and professional engineering services to Vantage Point's clients in a wide array of technical and regulatory areas associated with telecommunications. I have a Bachelor of Arts degree in Physics from William Jewell College in Liberty, Missouri, and both Bachelor's and Master's degrees in Electrical and Computer Engineering from the University of Kansas in Lawrence, Kansas.

In 1985, I was hired by TRW, Inc. where my responsibilities included system design of the communications payloads for classified and unclassified satellite systems and ground stations. In 1991, I began working for CyberLink Corporation where I provided engineering and technical consulting services regarding voice and data networks for a broad range of government and private sector businesses. In 1996, I became a Senior Professional Engineer with Martin and Associates, Inc. where I designed and engineered fiber optic transport networks, broadband access networks, packet video networks and wireless networks. In 1999 I was promoted to the position of General Manager of the Telecom Engineering and Consulting division of Martin Group and had overall responsibility for the consulting and engineering services. I was a founder of Vantage Point in 2002 and have been its CEO since then I have provided wireline and wireless engineering services to a variety of national and international clients and have provided strategic and business planning to many telecommunications companies and authored numerous papers on a variety of technical subjects.

I have been a member of NECA's Rate Development Task Force for the last 16 years and have served on NECA's Access Evolution Task Force. I am a current member of NTCA-The Rural Broadband Association's Industry & Regulatory Policy and Competitive & Advanced Services committee land NTCA's IP Evolution Workgroup.

I have provided regulatory and technical testimony in several proceedings in other states in regard to wireless Intra-MTA factors, interconnection agreements, phantom traffic, tandem and switching issues, wireline competition, wireless/wireline network capabilities, and forward-looking economic cost studies. I have testified in Federal litigation cases and presented at Federal Communications Commission (FCC), State Utility Commission, and United States Senate forums and workshops. Attached is my curriculum vitae.

Larry D. Thompson, PE
Vantage Point Solutions, Inc.

Curriculum Vitae

Of Larry D. Thompson

Currently

- A registered professional engineer in 20 states and Chief Executive Officer of Vantage Point Solutions. Vantage Point Solutions has more than 600 clients (nationally and internationally) and more than 200 employees.
- Larry provides strategic planning, consulting, and professional engineering services spanning a wide array of technical and regulatory subjects associated with telecommunications.
- Frequent speaker at state and national conferences and has been an expert witness at many utility commission hearings and legal proceedings related to telecommunications.

Education

- Bachelor of Arts degree in Physics from William Jewell College (1983)
- Bachelor of Science in Electrical Engineering from the University of Kansas (1985)
- Master of Science degree in Electrical and Computer Engineering from the University of Kansas (1986)

Employment History

- 1985-1991: Satellite Systems Engineer – TRW, Inc (Redondo Beach, CA)
    - Designed communication payloads for classified and unclassified satellite systems and ground stations. Overall engineering responsibility for the Tracking and Data Relay Satellite System (TDRSS) Flight 7 and 8 as well as the Advanced Communications Technology Satellite (ACTS) systems and several classified satellite systems.
- 1991-1996: Senior Engineer – CyberLink Corporation (Boulder, CO)
    - Performed a variety of voice and data communications consulting for numerous private and public clients including school districts, municipalities, and the Federal government. Designed satellite systems and ground stations as well as city and campus data networks.
- 1996-2000: Senior Engineer – Martin and Associates, Inc. (Mitchell, SD)
    - Provided engineering and consulting services primarily to Rural Local Exchange Carriers including state and regional networks. Responsible for designing and managing the upgrades to the South Dakota Network SONET network and designing the regulatory framework for the use of this network. Engineered broadband networks and some of the original IP video networks.
- 2000-2002: General Manager of TCE – Martin Group, Inc. (Mitchell, SD)
    - I was responsible for a growing department of approximately 100 engineers and consultants and oversaw many large engineering projects including Syringa Networks in Idaho. Engineered some of the early ATM and IP Video networks. Built one of the first sales organizations for this industry.
- 2002-Present: CEO – Vantage Point Solutions, Inc. (Mitchell, SD)
    - One of the initial six founders and owners of Vantage Point Solutions. Have grown the company from a staff of 6 people to over 200 people. Vantage Point currently serves over 600 clients in 40 states and international. Active in both the technical and regulatory operations of the company. Currently involved in many state and national industry organizations and committees.

Boards and Industry Committees

- 2003-Present: National Exchange Carrier's Association (NECA) Rate Development Task Group
  - Assist in the development of service rates and new technologies for the rural telecommunications industry.
- 2005-2011 & 2013-2016: School Board, Mitchell Christian School
  - Served for 9 years and as the board president for 7 of those years. Involved with many of the school committees (Development, Finance, and Education)
- 2008-2010: NECA Access Evolution Task Force (2008-2010)
  - Assisted NECA and other industry experts to develop alternatives to access rates for recovery of network expenses.
- 2010-2016: Mitchell Area Development Corporation
  - Served as a board member, treasurer, and vice chairman of the development corporation for two terms.
- 2012-Present: National Telecommunication Cooperatives Association (NTCA) Industry and Regulatory Policy Committee
  - Elected to this committee in 2012 and reelected every year since. This committee sets the policy for the small rural carriers nationally.
- 2013-2017: State of South Dakota Transportation Commission
  - Appointed by Governor Daugaard in 2013 to the South Dakota transportation commission board; part of the time serving as the chairman.
- 2015-Present: Board of Directors, Dakota Wesleyan University
  - Serving on the school board and as part of the finance committee.
- 2017-Present: Broadband Deployment Advisory Committee (BDAC)
  - One of 29 people selected by FCC Chairman Pai to serve on the BDAC to help eliminate local, state, and federal barriers to broadband deployment.

Selected Industry Awards

- 2015: National Telecommunications Cooperative Association (NTCA) Associate Member of the Year
- 2016: Harold Hagan Award for Leadership in Economic Development for the Mitchell Community.

Key Regulatory Presentations and Ex Partes

I am a frequent speaker at local, state, and national conferences dealing with a variety of subjects including telecommunications, regulation, and national policy. Some of the key regulatory and policy presentations include the following.

- Presented at various US Senate events, including "Going the Last Mile – Closing the Digital Divide in Rural America," for Senator Tom Daschle (1999)
- Presented "Challenges Delivering Broadband in Rural Areas" at Tom Daschle's Technology Summit in Sioux Falls (2001)
- Presented a whitepaper I had written titled, "Demystifying VoIP - Rural America's Connection to the IP Enabled National Telecommunications Network" to a Senate Luncheon (2005)

- A participant on a US Senate Panel regarding rural broadband challenges with Senator Dorgan and Hilda Legg (2014);
- Presented to the South Dakota House and Senate Telecommunications Committees regarding Phantom Traffic (2004)
- Presented at various Federal Communications Events, including, an FCC Section 706 panel with FCC Commissioner F. Furchtgott-Roth (2000); was a panelist on the FCC's "Networks in Transition" workshop dealing with network's transition from TDM to IP (2011);
- Presented at the Nebraska Utility Commission Call Termination Workshop regarding Phantom Traffic issues (2011)
- Was a presenter on a nationally televised (C-SPAN) panel for the Hudson Institute in Washington DC with regard to "Broadband for Rural America: Economic Impacts and Economic Opportunities." (2012)
- South Dakota Telecom Association Public Utilities Commission Forum (2004, 2006, 2008, 2010, 2012, 2014, 2016) – Present on a variety of technical and regulatory subjects to the South Dakota PUC Commissioners and their staff.
- Presented at the Intelligent Community Forum in New York and was instrumental in getting Mitchell South Dakota inducted into the top 7 most Intelligent Communities in the World (2014)
- Frequent speaker at many state and national conferences in the telecommunication and electrical utility industries regarding technical, regulatory, and policy issues
- Signaling ExParte (NECA) – WC Docket No. 01-92, Developing a Unified Intercarrier Compensation Regime, https://ecfsapi.fcc.gov/file/6519869251.pdf
- Capital Budget Mechanism ExParte – Connect America Fund, WC Docket No. 10-90; A National Broadband Plan for Our Future, GN Docket No. 09-51; Establishing Just and Reasonable Rates for Local Exchange Carriers, WC Docket No. 07-135; High-Cost Universal Service Support, WC Docket No. 05-337; Developing a Unified Intercarrier Compensation Regime, CC Docket 01-92; Federal-State Joint Board on Universal Service, CC Docket No. 96-45; Lifeline and Link-Up, WC Docket No. 03-109. https://ecfsapi.fcc.gov/file/60001416120.pdf
- IntraMTA ExParte (NTCA) – Connect America Fund, WC Docket No. 10-90; A National Broadband Plan for Our Future, GN Docket No. 09-51; Establishing Just and Reasonable Rates for Local Exchange Carriers, WC Docket No. 07-135; High-Cost Universal Service Support, WC Docket No. 05-337; Developing a Unified Intercarrier Compensation Regime, CC Docket 01-92; Federal-State Joint Board on Universal Service, CC Docket No. 96-45; Lifeline and Link-Up, WC Docket No. 03-109, https://ecfsapi.fcc.gov/file/7021716808.pdf
- Numerous ExPartes filed and assisted on behalf of clients and State and National Organizations regarding technical and regulatory filings

Publications

- *A Technology for the Next Generation* – Rural Telecommunications Magazine, December 2003, pg. 23-26.
- *Look Who's Talking Now – Do Video & Voice Mix?* – USTA Telecom Executive Magazine, September/October 2004, pg. 30-32.
- *Distance Sensitivity of Rural Telephone Company Transport Networks*, South Dakota Telecommunications Association, CC Docket 01-92, July 2005. (https://ecfsapi.fcc.gov/file/6518012568.pdf)

- *Demystifying VoIP: Rural American's Connection to the IP-Enabled National Telecommunications Network* – Foundation for Rural Service, Rural Telecom Educational Series; December 5, 2005.
- *A Fiber Runs Through It* – Outside Plant Magazine, November 2006, pg. 30-34.
- *Lighting the Way to Increased Bandwidth* – OPASTCO Roundtable Magazine, Summer 2009, pg. 32-37.
- *Providing World-Class Broadband: The Future of Wireless and Wireline Broadband Technologies* – Foundation for Rural Service, Rural Telecom Educational Series, March 4, 2010.
- *An Engineering Analysis of the Broadband Assessment Model Using Actual Network Data* – Nebraska Rural Independent Companies, WC Docket 10-90, July 2010 (https://ecfsapi.fcc.gov/file/7020522078.pdf, Appendix A)
- *Wireless Technology Cannot Deliver Broadband Services as Envisioned in the National Broadband Plan, A Technical Analysis* by Vantage Point Solutions On Behalf of the Nebraska Rural Independent Companies, May, WC Docket 10-90, May 23, 2011 (https://ecfsapi.fcc.gov/file/7021650684.pdf, Appendix A)
- *Analysis of Satellite-Based Communication Services*, November 2013. (https://ecfsapi.fcc.gov/file/7520956711.pdf)
- *Wireless Broadband is Not a Viable Substitute for Wireline Broadband*, WC Docket Nos. 10-90, 14-58 and 14-192, March 2015. (https://ecfsapi.fcc.gov/file/60001039981.pdf)
- *Comparing Wired and Wireless Networks – Broadband Communities Magazine*, May/June 2015, pg. 86-92. (http://bbcmag.epubxp.com/i/530181-may-jun-2015)
- *Evaluating 5G Wireless Technology as a Complement or Substitute for Wireline Broadband*, February 2017. (https://ecfsapi.fcc.gov/file/1021310720678/02.13.17%20FCC%20Ex%20Parte-NTCA%20Letter%20Submitting%202017%20Technical%20Paper%2C%20WC%2010-90.pdf)
- *5G Is Not the Answer For Rural Broadband – Broadband Communities Magazine*, March/April 2017, pg. 24-30. (http://bbcmag.epubxp.com/i/812274-mar-apr-2017)
- *Latency Considerations for Satellite Broadband*, May, 2017 (https://www.ntca.org/images/stories/Documents/Advocacy/FederalFilings/05.18.17%20rural%20coalition's%20opposition%20to%20hughes%20pfr%20of%20caf%20ii%20auction%20order,%20wc%2010-90,%2014-58.pdf)
- *NTCA and Vantage Point Solutions Reply to WISPA Ex Parte*, September 6, 2017 (https://ecfsapi.fcc.gov/file/10906010564454/09.06.17%20NTCA%20and%20Vantage%20Point%20Solutions%20Reply%20to%20WISPA%20Ex%20Parte%2C%20WC%2010-90.pdf)
- *Satellite Broadband Remains Inferior to Wireline Broadband*, September 7, 2017 (https://ecfsapi.fcc.gov/file/1090792953817/VPS-Satellite%20Broadband%20Remains%20Inferior%20to%20Wireline%20Broadband%2009-07-17.pdf)
- *Deploying a Broadband Network – From Start to Finish (and Beyond)*, January 2018, (https://ecfsapi.fcc.gov/file/1052598259628/USF%20Budget%20NPRM%20Comments%20FINAL.pdf – Attachment 1)
- *5G Technology: Smart Decisions for Smart Cities*, March/April 2018, pg. 38-42. (https://bbcmag.epubxp.com/i/964326-mar-apr-2018/44?m4)
- *Broadband Speed Characteristics*, June 2018 (https://www.ntca.org/sites/default/files/federal-filing/2018-06/06.18.18PerformanceTestingJune152018%2CDk.No_.10-90.pdf)

Testimony and Expert Reports

- Direct Testimony – South Dakota Public Utilities Commission, TC02-176, In the Matter of the Petition for Arbitration on behalf of WWC License L.L.C. with Certain Independent Local Exchange Companies, http://puc.sd.gov/Dockets/Telecom/2002/TC02-176.aspx
- Expert Report and Testimony – South Dakota Public Utilities Commission, CIV04-3014, United States District Court, Southern Division, South Dakota, Verizon Wireless, LLC, Commnet Cellular License Holding LLC, Missouri Valley Cellular, Inc., Sanborn Cellular, Inc., and Eastern South Dakota Cellular, Inc. d/b/a Verizon Wireless v. South Dakota Public Utilities Commission defendants, http://puc.sd.gov/Dockets/Civil/2004/civ04-3014.aspx
- Direct Testimony – South Dakota Public Utilities Commission, TC06-036 Through TC06-042, In the Matter of the Petitions of Armour Independent Telephone Company, Bridgewater-Canistota Telephone Company, Golden West Telecommunications Cooperative, Inc., Kadoka Telephone Company, Sioux Valley Telephone Company, Union Telephone Company, and Vivian Telephone Company (Collectively the "Golden West Companies") for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to Interconnection Agreements with WWC License L.L.C. ("Western Wireless"), http://puc.sd.gov/Dockets/Telecom/2006/TC06-036.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC06-175, In the Matter of the Petition of Sprint Communications Company L.P. for Arbitration Pursuant to the Telecommunications Act of 1996 To Resolve Issues Relating to an Interconnection Agreement with Interstate Telecommunications Cooperative, Inc., http://puc.sd.gov/Dockets/Telecom/2006/TC06-175.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC06-176, In the Matter of the Petition of Sprint Communications Company L.P. for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to An Interconnection Agreement with Brookings Municipal Utilities d/b/a Swiftel Communications, http://puc.sd.gov/Dockets/Telecom/2006/TC06-176.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC06-181, In the Matter of the Petition of Venture Communications Cooperative for Suspension or Modification of Local Dialing Parity and Reciprocal Compensation Obligations, http://puc.sd.gov/Dockets/Telecom/2006/TC06-181.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-111, In the Matter of the Petition of Alliance Communications Cooperative, Inc. for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to an Interconnection Agreement with Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/TC07-111.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-112, In the Matter of the Petition of McCook Cooperative Telephone Company for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to an Interconnection Agreement with Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/TC07-112.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-113, In the Matter of the Petition of Beresford Municipal Telephone Company for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to an Interconnection

Agreement With Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/tc07-113.aspx

- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-114, In the Matter of the Petition of Kennebec Telephone Company for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to an Interconnection Agreement with Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/tc07-114.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-115, In the Matter of the Petition of Santel Communications Cooperative for Arbitration Pursuant to the Telecommunications Act of 1996 to Resolve Issues Relating to an Interconnection Agreement with Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/tc07-115.aspx
- Direct and Rebuttal Testimony – South Dakota Public Utilities Commission, TC07-116, In the Matter of the Petition of West River Cooperative Telephone Company for Arbitration Pursuant to the Telecommunications Act Of 1996 to Resolve Issues Relating to an Interconnection Agreement with Alltel Communications, Inc., http://puc.sd.gov/Dockets/Telecom/2007/tc07-116.aspx
- Expert Report – U.S. District Court, District of South Dakota, Southern Division, CIV05-4181, WWC License L.L.C and South Dakota Rural Local Exchange Carriers InterMTA
- Rebuttal Testimony – South Dakota Public Utilities Commission, TC08-006 Through TC08-027, In the Matter of the Petitions for Suspension or Modification of 47 U.S.C. Section 251(B)(2) of the Communications Act of 1934 as Amended, http://puc.sd.gov/commission/dockets/telecom/2008/tc08-006/080608.pdf
- Direct Testimony – South Dakota Public Utilities Commission, TC10-014, In the Matter of the Investigation of Pricing Regulation for Switched Access Services Provided by Competitive Local Exchange Carriers, http://puc.sd.gov/Dockets/Telecom/2010/tc10-014.aspx
- Direct and Rebuttal Testimony – South Carolina Public Service Commission, Docket 2015-290-C, Petition of the South Carolina Telephone Coalition for a Determination that Wireless Carriers are Providing Radio-Based Local Exchange Services in South Carolina that Compete with Local Telecommunications Services Provided in the State, https://dms.psc.sc.gov/Web/Dockets/Detail/11560
- Direct and Rebuttal Testimony – California Public Utilities Commission, Docket R.11-11-007, Order Instituting Rulemaking into the Review of the California High Cost Fund-A Program, https://apps.cpuc.ca.gov/apex/f?p=401:1:0::NO:RP.
- Direct and Supplemental Testimony – California Public Utilities Commission, Docket A.11-12-011, In the Matter of Application of Kerman Telephone Co. (U1012 C) d/b/a Sebastian, to Review Intrastate Rates and Charges and Rate of Return for Telephone Service Furnished within the State of California and Modify Selected Rates, https://apps.cpuc.ca.gov/apex/f?p=401:1:0::NO:RP::
- Direct Testimony – Nebraska Public Service Commission, Dockets FC-1346 and FC1347, Great Plains Communications, Inc. and Great Plains Broadband, Inc., Complainants, v. Sprint Communication Company, L.P. a/k/a Sprint, Respondent; Sprint Communication Company, L.P. a/k/a Sprint, Complainants, v. Great Plains Communications, Inc. and Great Plains Broadband, Inc., Respondent; http://www.psc.nebraska.gov/index.html
- Direct and Rebuttal Testimony – Nebraska Public Service Commission, Dockets FC-1348, FC-1351, FC1352, FC-1355, and FC-1356, AT&T Communications of the Midwest, Inc. Complainant, v. Cambridge Telephone Co., Eastern Nebraska Telephone Company, Great Plains

Communications, Inc., Hartington Telecommunications Company Inc., Hooper Telephone Company, Northeast Nebraska Telephone Company, and Rock County Telephone Company, Respondents; Eastern Nebraska Telephone Company, Complainant v. AT&T Communication of the Midwest, Inc. a/k/a AT&T, Respondent; Great Plains Communications, Inc., Complainant, v. AT&T Communication of the Midwest, Inc. a/k/a AT&T, Respondent; Northeast Nebraska Telephone Company, Complainant, v. AT&T Communication of the Midwest, Inc. a/k/a AT&T, Respondent; Rock County Telephone Company, Complainant, v. AT&T Communication of the Midwest, Inc. a/k/a AT&T, Respondent; http://www.psc.nebraska.gov/index.html

- Expert Report – United States District Court for Lancaster County, Nebraska, Case CI 17-2961, Windstream Services, LLC v. Spickelmier and Son, Inc., Fiber Optic Damage Repair Costs, February 22, 2017.
- Expert Report – United States District Court for Southern District of Iowa Central Division, Case No. 4:16-cv-00219-CRW-SJB, MCI Communications Services, Inc. v. Plowman & Stanley Trenching, L.C., Fiber Optic Damage Repair Costs, March 15, 2017.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
July 1, 2018 Annual Access Charge Tariff Filing	)	WC Docket No. 18-100
	)	
	)	
South Dakota Network, LLC Tariff F.C.C. No. 1	)	Transmittal No. 13

DECLARATION OF JOSEPH NEUBAUER

I, Joseph Neubauer, hereby state the following:

1. I am the Carrier Management & Business Systems Support Manager of South Dakota Network, LLC (SDN). I maintain and support the Centralized Equal Access (CEA) Operational Support System (OSS) at SDN and I manage a team consisting of Business Systems Analysts, Software Support Specialists, and OSS Platform Administrators.

2. I began my career at Martin and Associates, Inc. in 1984 as a software developer, where I was one of four staff that built the first CEA OSS for Iowa Network Access Division (now Iowa Network Services, Inc. d/b/a Aureon (INS)). I later deployed the CEA systems at Minnesota Equal Access Network (MEANS) and SDN, and I was responsible for the maintenance, development, and support of those OSS systems (as well as a billing system built for wireless service providers) going forward.

3. After 18 years of service at Martin, including advancing to Director of Software Development, I started my own software company called FireSteel Technologies. As President of FireSteel Technologies, I directed software engineers in the construction of various software products and custom development projects, including the rebuilding of the CEA OSS using newer technologies for INS and SDN.

4. I left FireSteel Technologies in 2010 to work for SDN as Manager of CABS and Carrier Management, where one of my primary functions was to maintain and support the CEA OSS system and be the primary point of contact with the rural local exchange carriers (RLECs) for CEA. In April 2014 I became Manager of Application Development and had a team of software developers working for me up until early 2018, when I obtained my current position.

5. It is my professional opinion that, with the exception of custom built applications by another CEA provider, there are no other third party systems available today that can support what is required for CEA in today's infrastructure. The RLECs that subtend the CEA providers have integrated their systems and their processes with the CEA providers' processes and systems. Accordingly, I do not believe that any other carrier could replace a CEA provider without a substantial amount of development time and expense.

6. Below are a summary of CEA and a description of the Operational Support System (OSS) built for CEA. In order to perform centralized equal access at a tandem switch, CenturyLink would have to develop and implement these components.

II. SUMMARY OF CENTRALIZED EQUAL ACCESS

7. CEA arose as a technology platform in the 1980's as a result of the FCC's mandate to local exchange carriers to give their subscribers Equal Access to all Interexchange Carriers (IXCs) serving in their area. For RLECs there were two main obstacles to providing Equal Access to their subscribers. The first one was the cost of switch upgrades to be able to provide Equal Access at the end offices. The second one was connectivity to IXCs. In order to have a competitive long distance market for their subscribers RLECs needed carriers to come to

them, and with such a small subscriber base in rural America there was not much incentive for IXCs to do so.

8. RLECs banded together to create CEA by placing an Access Tandem with specialized equal access software at a central location that would be attractive to the IXCs. This avoided switch upgrades and facilitated IXC access to subscribers from all RLECs without having to build IXC transport facilities to each RLEC.

9. The first CEA provider to be constructed was Iowa Network Services (INS), followed by Minnesota Equal Access Network Services (MEANS), and then South Dakota Network (SDN). These three CEA providers connected hundreds of RLECs and made possible IXC competition in hundreds of rural communities.

10. In addition to the Access Tandem and the network connectivity, substantial investment in Operational Support Systems (OSS) was required. I played a key role in the software design, development, implementation, and support of those systems for all three CEA providers and later worked with two of those three CEA providers to rebuild those systems using new technologies. Over the course of time millions of dollars have been invested in the creation, deployment and ongoing support for these systems.

11. To my knowledge with the exception of custom built applications by another CEA provider, there are no other third party systems available today that can support what is required for CEA in today's infrastructure. The RLECs that subtend the CEA providers have integrated their systems and their processes with the CEA providers' processes and systems. Accordingly, I do not believe that any other carrier could replace a CEA provider without a substantial amount of development time and expense.

II. SUMMARY OF OPERATIONAL SUPPORT SYSTEM

12. In order to perform centralized equal access at a tandem switch, CenturyLink would have to develop and implement these components, described below.

A. Centralized Phone Data Management.

13. A centralized database contains information about each Working Telephone Number (WTN) which is required to support the industry standard Customer Account Record Exchange (CARE) process that serves as an interface between the IXCs and the RLECs. The CEA OSS does all CARE transaction processing for all participating RLECs. This includes things like InterLATA and IntraLATA Primary Interexchange Carrier (PIC) selection, PIC freezes, billing information changes, phone number activations, and phone number disconnects. This system also handles the Letter of Agency process between the RLECs and the IXCs.

14. Security is designed so that a given RLEC only has access to its own subscribers' information. RLECs can update their subscriber information via a website, however most RLECs have an automated real time interface between the CEA OSS and their internal billing and customer care platforms. This eliminates the need for manual entry of data on the website.

15. In addition to the centralized database and the CARE transaction processing the CEA OSS has a real time interface with the CEA Access Tandem switching platform. This feature is necessary to keep all PIC information synchronized and all transactions recorded.

16. Caller name transactions are also processed, here with real time updates to a local Service Control Point (SCP) and daily file updates to a national provider for caller name (CNAM) and line information database (LIDB) entries by Working Telephone Number (WTN).

B. PIC Transactions

17. A very important part of the integration between the RLECs and the CEA provider is the distribution of PIC transaction data. Every time a new customer is added, or a PIC change is made the transaction is recorded to the nearest second. Once a day those transactions are sent to the RLECs for consumption by their billing and call rating platforms. Many of the RLECs prefer to use call records from their own switch for end user billing. This arises because in the absence of end office equal access, the RLEC switch has no knowledge of which IXC handled the call and therefore those RLECs cannot record the carrier identification code (CIC) on the call record. The PIC transactions are then used as a part of the call processing to determine who the PIC was at the time of the call.

C. Usage Processing

18. The CEA Usage Processing system processes call detail and other records from various sources and performs the following functions:

19. *Data Translation*. Data translation converts industry standard AMA and other formats into a common database format.

20. *Traffic Type Identification.* Identifies and classifies different types of traffic such as 1+ Long Distance, International, Directory Assistance, Inbound/Terminating, Outbound Toll free, Operator Services, and others.

21. *Call Guiding.* The call guiding process assigns the responsible carriers for access billing and for end user billing which can be different. It also uses switch call detail record data and configuration tables combined with industry supplied data such as the Local Exchange Routing Guide (LERG) and the Thousands Block Pooling tables to assign the call records to the appropriate RLEC taking number pooling and number porting into consideration.

22. *Call Rating.* Call rating is performed on some traffic for specific carriers.

23. *Error Processing.* A built in error processing module provides for the reprocessing of call records that initially fail due to data integrity or system configuration issues.

24. *Summarization.* Summary data is also generated to facilitate downstream reporting and billing processes.

D. Usage Data Distribution

25. The CEA Usage Data Distribution system is responsible for the distribution of a wide variety of information to RLECs, IXCs, and third party service providers. It supports ad-hoc requests as well as scheduled requests for daily, weekly and monthly activities. Some of the most widely used distributions are as follows.

26. *CARE Transaction Data*. The industry standard CARE process involves the distribution of CARE transactions to IXCs for PIC changes, billing information changes, PIC freezes, LOA responses, number activations, and disconnects. This centralized process alleviates the RLECs of the need for any CARE processing.

27. *PIC Transactions.* Sent to RLECs daily.

28. *Caller name and LIDB.* Sent daily to National Service Providers.

29. *Carrier Access Billing Records.* Call detail records for access billing are shipped to all RLECs for access billing and the CEA provider is the only source of those records. The carrier that is billed access for a given call may be a different carrier than what the subscriber had for a PIC. This due to the different types of carrier to carrier service agreements that can be found throughout the industry. These call details records include all access billable traffic originating from and terminating to the RLEC. These data distributions are typically sent

monthly based on the cutoff dates for carrier access billing and vary widely by RLEC. Data is sent in industry standard Exchange Message Interface (EMI) format.

30. *8XX Database Dips.* The CEA provider also provides centralized service for performing the 8XX database dip to determine which carrier to route a toll free call to. As a part of this the CEA provider distributes dip usage counts to RLECs for use in their carrier access billing to the IXCs.

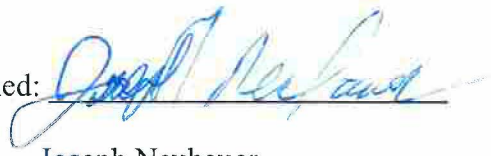
31. *End User Billing Records.* End user billing records are sent on a variety of schedules to RLECs or a third party service provider for processing. They are sent in industry standard Exchange Message Interface (EMI) format as well as other non-standard formats. Records may be rated or unrated. Distributions may contain all billing records or a subset depending on what is needed by the receiving RLEC.

32. *Reporting*. Distribution of various usage reports to IXCs and RLECs are done on demand and on a scheduled basis.

III. Conclusion

33. For the forgoing reasons, it is my opinion that, with the exception of custom built applications by another CEA provider, there are no other third party systems available today that can support what is required for CEA in today's infrastructure. The RLECs that subtend the CEA providers have integrated their systems and their processes with the CEA providers' processes and systems. Accordingly, I do not believe that any other carrier could replace a CEA provider without a substantial amount of development time and expense.

34. I certify under penalty of perjury that I have personal knowledge of the factual statements contained in the preceding paragraphs, and that said statements are true and correct to the best of my knowledge, information, and belief.

Signed: 

Joseph Neubauer

Executed this 13th day of February, 2019.